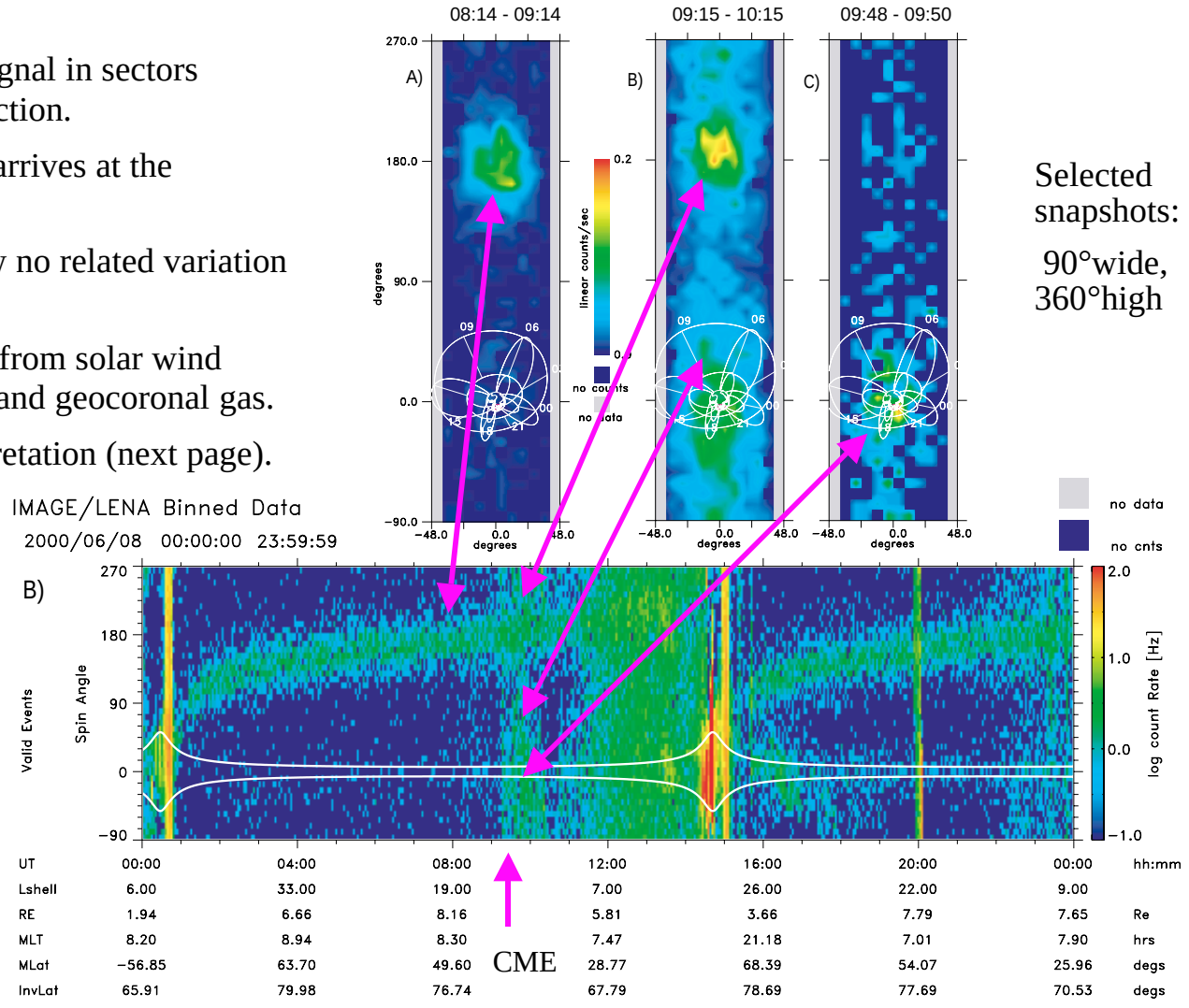
Discovery of Solar Wind Low Energy Neutral Atoms

- LENA imager routinely sees signal in sectors including or closest to sun direction.
- Signal increases when a CME arrives at the magnetosphere.
- SOHO EUV observations show no related variation of solar EUV.
- Conclusion: fast neutral atoms from solar wind interaction with interplanetary and geocoronal gas.
- Simulations corroborate interpretation (next page).



Selected snapshots:

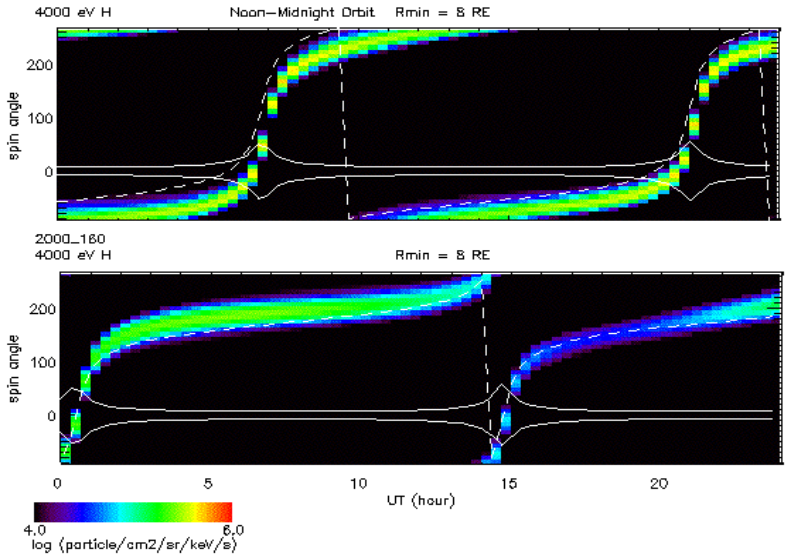
90°wide, 360°high

- Spinogram shows time evolution with CME arrival at 09:15.
- Arrows indicate timing of snapshot features.

After Moore et al., GRL, in press, 2001.

Simulation *vs* Observation of Solar Wind LENAs

- **Simulations of SWLENA Spinograms**
  - Flux computed along line of sight from s/c to 50 RE to create image every 2 minutes.
  - Images collapsed to orbit plane, laid up as strips.
    - Upper Panel: sun in FOV
    - Lower Panel: sun beyond FOV



After Collier, Fok et al., JGR, in review, 2001.

- **Observations of SWLENAs as Spinograms**
  - Flux measured by IMAGE LENA imager, at 2 minute time spacing.
  - Images are collapsed to orbit plane, laid up as strips vs. time.
    - Upper panel: sun in FOV
    - Lower panel: sun beyond FOV